

ABSTRACT OF THE DISCLOSURE

A film thickness measurement apparatus (1) comprises an ellipsometer (3) for acquiring a polarization state of a film on a substrate (9) and a light interference unit (4) for acquiring spectral intensity of the film on the substrate (9). In an optical system (45) of the light interference unit (4), a light shielding pattern (453a) is disposed in an aperture stop part (453), and an illumination light from a light source (41) is emitted to the substrate (9) through the optical system (45). A reflected light from the substrate (9) is guided to a light shielding pattern imaging part (43), where an image of the light shielding pattern (453a) is acquired. When the ellipsometer (3) performs a film thickness measurement, a tilt angle of the substrate (9) is obtained on the basis of the image of the light shielding pattern (453a) and a light receiving unit (32) acquires a polarization state of the reflected light. An calculation part (51) obtains a thickness of a film with high precision from the polarization state of the reflected light by using the obtained tilt angle.